THE DARKNESS OF LONDON AIR.

ONCE more the inhabitants of London are suffering from the inconvenience, that a darkened atmosphere naturally causes. This darkened atmosphere usually commences towards the end of October, and continues off and on sometimes to the end of February—that is, for a period of some sixteen weeks we partially and at times wholly deprive ourselves of the full benefit of the sun's rays, and live in a state of artificial darkness; and when we consider how very little daylight there is during the winter months (even under the best of conditions), it is surely very foolish to reduce the daylight, and create darkness in place of the daylight.

Is anything being done to remedy this state of affairs? Apparently very little is being done to make matters better, whilst on the other hand a good deal is being done to make things worse; for instance, each year sees thousands of new buildings added to London, many of these buildings being factories and workshops.

We have now (within the Metropolitan area) some 765,000 tenements, and at present (with the exception of a few Acts dealing with factory smoke), the countless chimneys of these numerous buildings are permitted to belch forth volumes of sooty smoke, almost without any check whatever. As for the great majority of the buildings in London (that is, the dwelling-houses), we positively have no means of controlling their smoke.

Under these circumstances it is hardly very surprising, that the atmosphere over London in the winter is so unnaturally dark, and it is further not to be wondered at that we have to expend (or rather waste) vast sums of money in supplying ourselves with artificial light, to enable us to carry on our daily business. It is needless to point out that this outlay would be unnecessary, if we were really to adopt means to deal effectively with this smoke nuisance.

In NATURE, vol. xxxix. pp. 441 *et seq*, various results were given, which were intended to show, in an easily-understood manner, how dark the London air is during the winter-time, owing to smoke fog; it was also shown that other large towns suffer from the same cause.

It is now proposed to give some of the results of a few more observations, taken in London during the winter of 1889-90.

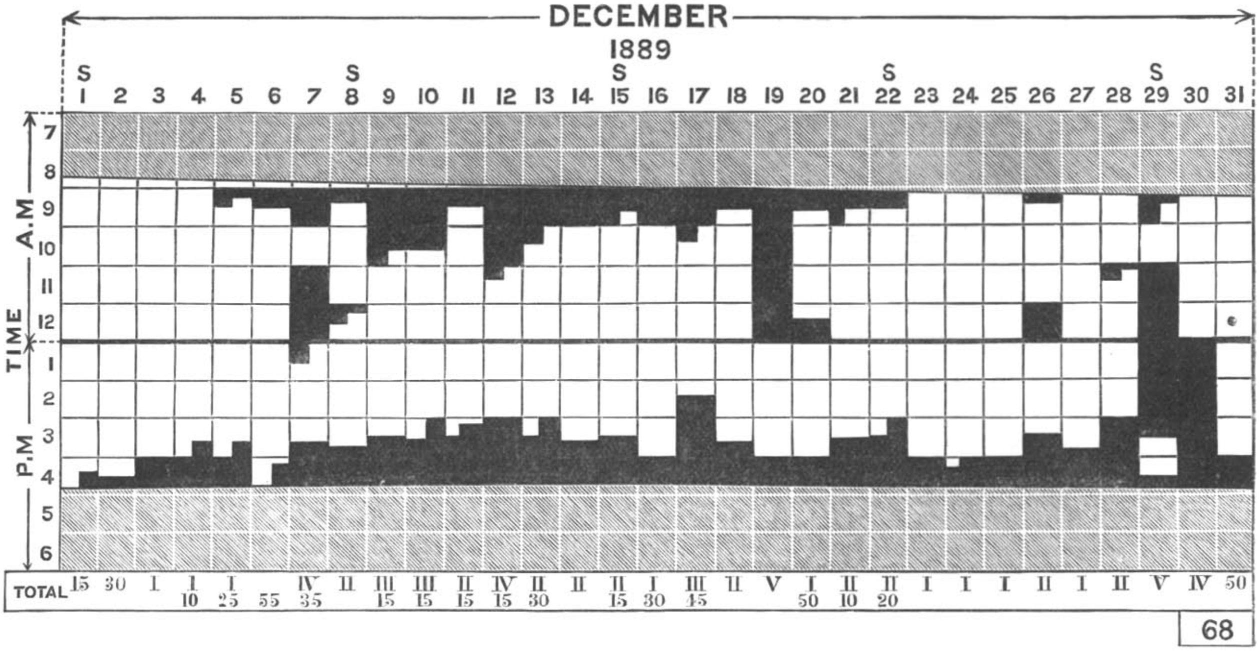
Table I. gives the results obtained in two districts in London, one being at the West End and the other at the East End, about 9 miles apart.

TABLE I.

District in London in which the chart was kept.	December 1889.	January 1890.	February 1890.	Total number of hours during which artificial light was used.
Hammersmith, W.	10	3½	3	16½ hours
Homerton, N.E.	68	38	9½	115½ hours

It will be seen that at Homerton the inhabitants lived for about 115½ hours (during the three months named) in a partial state of darkness during the day-time, and if we consider how short the average length of each day is at this time of year, we find that out of the 90 days concerned, nearly 14 days were practically turned into nights, causing both inconvenience and expense.

TABLE II.—*Chart for Black or Dark Yellow Fog.*



During the month of December 1887, and the months of January and February 1888, the number of hours when artificial light was used at Homerton reached the total of 67¼ hours.

Table II. shows in detail, the kind of chart used to record the darkness caused by smoke fogs. I am indebted to a friend for partly suggesting the form of chart which is given in this table.

The original chart (only a portion being given here) was divided into 2160 squares, every 24 of these squares representing one day, and each single square one hour; these single squares are again subdivided into four parts of 15 minutes each.

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The grey colour shows the night-time, the white the day-time, and the black denotes the time each day during which partial darkness prevailed owing to fog.

To show the serious way, in which this artificial darkness of the London air interferes with the numerous kinds of work, that depend upon a clear atmosphere and good light, various records were kept during the winter of 1889-90.

The results of two of these records are given below.

The photographer is, perhaps, one of the greatest sufferers from this artificial state of darkness during the winter-time.

There are various methods in use by which photographs are reproduced, and most of these methods depend on good natural light; Table III. deals with the "silver process."

TABLE III.—*Photography* (*Silver Process*).

	November 1889.		December 1889		January 1890.		February 1890.		March 1890.	
Number of days on which observations were taken in each month	26		24		27		24		26	
Number of days when no copy could be printed, owing to the darkness of atmosphere	7		10		7		3		5	
Longest time taken to print a single copy in one day[1]	5h. 10m.		5h. 45m.		4h. 40m.		4h. 45m.		3h. 0m.	
Shortest time taken to print a single copy in one day...	2h. 5m.		3h. 35m.		2h. 15m.		1h. 25m.		1h. 5m.	
Average time taken to print one copy in so many days in each month	Days	Time taken	Days	Time taken	Days	Time taken	Days	Time taken	Days	Time taken
	19	$3\frac{5}{19}$h.	14	$5\frac{3}{14}$h.	20	$3\frac{4}{5}$h.	21	$3\frac{1}{21}$h.	21	$1\frac{3}{7}$h.

[1] (*a*) In fine clear weather, it takes about 30 minutes to print a single copy. (*b*) Rain was the cause of no copy being printed on certain days; this remark applies to Table IV. as well.

These observations were taken at Ealing, London, W. It is hardly necessary to point out that Ealing is far away from the centre of London.

The record was kept daily (Sundays and Bank Holidays excepted) during the five months named in Table III.

It will be seen, that the shortest time taken to print a single copy on one of the 127 days in question, was about twice as long as it would have taken if the atmosphere had been clear, &c.; it will also be seen that, out of the 127 days on which observations were taken, on no less than 32 days no copy could be printed at all.

Table IV. deals with a method of copying drawings known as the ferro-prussiate process; this process is very extensively employed by architects, engineers, &c.; it absolutely depends upon a clear atmosphere.

TABLE IV.—*Ferro-Prussiate Process for Copying Drawings.*

	November 1889.		December 1889.		January 1890.		February 1890.		March 1890.	
Number of days on which observations were taken	21		15		15		17		22	
Number of days when no copy could be printed owing to the darkness of atmosphere	9		9		5		4		6	
Longest time taken to print a single copy in one day[1]	7h. 30m.		4h. 15m.		4h. 0m.		1h. 30m.		0h. 35m.	
Shortest time taken to print a single copy in one day	0h. 25m.		1h. 20m.		0h. 15m.		0h. 5m.		0h. 4m.	
Average time taken to print one copy in so many days in each month	Days	Time taken	Day	Time taken	Days	Time taken	Days	Time taken	Days	Time taken
	12	$2\frac{1}{6}$h.	6	3h.	10	$1\frac{4}{5}$h.	13	$\frac{8}{13}$h.	16	$\frac{1}{4}$h.

[1] In fine clear weather it takes about 4 minutes to print a single copy.

The observations were taken at New Cavendish Street, Portland Place, W.

Out of the 91 days on which a record was taken during the five months named in Table IV., on 33 days it was found impossible to print a single copy of a drawing, and on one day only could a copy be printed in 4 minutes, and this was on March 14, 1890; about 4 minutes is the shortest time possible, that a clear copy can be printed in.

It is, perhaps, unnecessary to give any more results in this paper, to help to prove the existing state of artificial darkness caused by these smoke fogs; but would it be asking too much, if we were to request the London County Council to take steps at once to enforce rigorously the existing Acts of Parliament, which have been framed to deal with factory smoke, and to consider (in a comprehensive and thorough manner) the best means of coping effectively with the smoke nuisance generally?

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